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**MIDDLE YELLOWSTONE
AREAWIDE PLANNING
ORGANIZATION**

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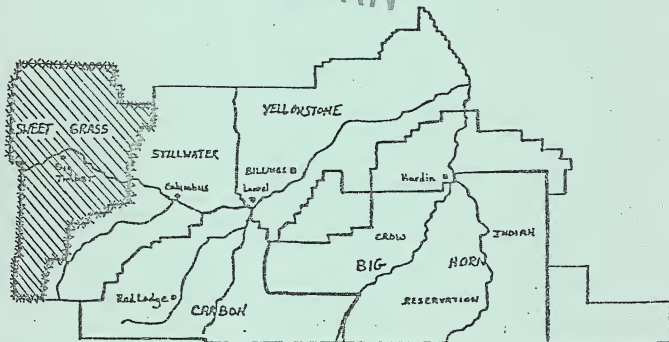
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MYAPO Board of Directors

<u>Member</u>	<u>Represents</u>
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BJARNE BJORNDAAL, Co. Commissioner Sweet Grass County Big Timber, MT	Sweet Grass County
ELIZABETH BRENNAN, Councilwoman 1st Ward, City of Hardin Hardin, MT	City of Hardin
McLEAN CLARK, <u>Secretary/Treasurer</u> Mayor of Big Timber Big Timber, MT	City of Big Timber
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JIM KRAFT, Director Civil Defense, City Hall Billings, MT	Yellowstone County
DANIEL C. OLD ELK, SR., Project Officer Crow Tribal Water Resources Commission Crow Agency, MT	Crow Reservation Big Horn County
ED STOW, Chief of Environmental Sciences City/County Health Department Billings, MT	City of Billings
JIM WEISGERBER Bridger, MT	Carbon County

MYAPO Technical Committee

	<u>County Represented</u>
CLINT BISHOP, Regional Fishery Mgr. Montana Fish and Game Dept. Billings, MT	Yellowstone County
JERRY D. DYKSTRA Roberts, MT	Carbon County
RODNEY FINK, Sanitarian Carbon-Stillwater Counties Columbus, MT	Stillwater County
GEORGE FREEMAN , <u>Vice-Chairman</u> Director City-County Planning Board Billings, MT	Yellowstone County
RICK GOLD, Regional Hydrologist Bureau of Reclamation Billings, MT	Yellowstone County
JACK L. GRIBBLE, Director Carbon County Planning Office Red Lodge, MT	Carbon County
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TOM KELLY, Planner Stillwater County Courthouse Columbus, MT	Stillwater County
ROY LEMBKE, Range Conservationist Bureau Land Management Billings, MT	Yellowstone County
TOM LIPPERT, Sanitarian Hardin, MT	Big Horn County
ROBERT H. MADSEN, Study Manager Yellowstone Level "B" Missouri River Basin Commission Billings, MT	Yellowstone County

MYAPO Technical Committee (Cont)

	<u>County Represented</u>
ROBERT W. MILLER, Ass't. Forest Supervisor Custer National Forest Billings, MT	Yellowstone County
RUSTY ROKITA, Field Assistant Mont. Dept. of Community Affairs Billings, MT	Yellowstone County
MIKE SIERZ, Director Sweet Grass County Planning Big Timber, MT	Sweet Grass County
STEPHEN R. SMITH, District Conservationist Soil Conservation Service Columbus, MT	Stillwater County
TOM SMITH, Environmentalist Montana Power Company Butte, MT	All Counties
GERALD F. WEBER, County Extension Agent Carbon Co. Extension Service Joliet, MT	Carbon County
JAMES YEDLICKA, <u>Chairman</u> Supervisor Soil Conservation District Fromberg, MT	Carbon County

MYAPO Staff

ALLEN E. BOND, Project Director
PHYLLIS A. COOMBER, Secretary
BARBARA B. PAYNE, Public Relations
ROY A. WELLS, Water Quality Specialist

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WHY MYAPO?

1. *What does MYAPO stand for?*

It stands for the Middle Yellowstone Areawide Planning Organization.

2. *What does Section 208 mean?*

This is the section of Public Law 92-500, or the National Water Pollution Control Act, Amendments of 1972 (NWPCA-A 1972) that authorizes the Environmental Protection Agency (EPA) to conduct and fund this program.

3. *What is MYAPO doing?*

It is developing an areawide water pollution control plan. EPA states it a little differently, i.e. "An Areawide Waste Treatment Plan".

4. *What does "areawide" mean?*

It means that the planning area encompasses more than one county. We are planning for five (5) counties: Big Horn, Carbon, Stillwater, Sweet Grass, and Yellowstone; and the Crow Indian Reservation.

5. *Who determined which counties should constitute the planning area?*

The Governor of Montana designated the boundaries of the planning area -- sometimes these coincide with economic districts, drainages, or however the Governor decides.

6. *Are there any other designated APOs in Montana?*

Yes, three others: the Yellowstone-Tongue with six (6) counties and the Northern Cheyenne Indian Reservation, the Blue Ribbons of the Big Sky County with Gallatin and Madison Counties, and the Flathead Drainage with Flathead and Lake Counties.

7. *Will this plan go the route of many other plans, that is to the shelf where it will collect dust?*

EPA stresses that this plan is to be implemented; therefore, it must be economically, environmentally, socially, and institutionally sound.

8. *How much is this program costing the taxpayers?*

The total grant is for \$735,000.00. \$200,000.00 is to be used for the Crow Tribe subagreement. There is no cost sharing. This is a 100% grant by EPA.

9. *Why should Montanans be concerned about water pollution since most of our streams have high quality water?*

Public Law 92-500 charges EPA to establish water pollution control throughout all of the States. The planning is to cover a twenty (20) year period. Many developments may occur during this time which may change the quality of our waters. For example, in our APO area, hard rock mining may become a reality in the Stillwater Complex. Certainly extensive coal mining will be initiated within the next 20 years in Big Horn County and possibly in Carbon and Yellowstone Counties.

10. *What are the goals of Public Law 92-500?*

The primary aim of the Act is to "restore and maintain the chemical and biological integrity of the Nation's waters". By 1983, wherever possible, water quality is to be suitable for recreational contact and for protection and propagation of fish and wildlife. A further national goal is to eliminate the discharge of pollutants totally by 1985. (This is not a legal binding requirement, however.)

11. *How does the EPA expect to achieve these goals?*

- a. EPA has developed an expanded system of federal grants to plan (Facility Planning) and construct (Title II - Grants for Construction of Treatment Works) publically owned waste treatment plants.
- b. A permit program (the National Pollution Discharge Elimination System - NPDES permits) has been established and geared to restricting pollutant discharges from point sources (discernible, confined and discrete conveyances, including ditches).

- c. Nonpoint sources pollution control is to be achieved by the 208 Program outputs.

12. *How is MYAPO organized?*

It is a local, five (5) county (and the Crow Tribe) organization. The Board of Directors consists of thirteen (13) members who are representatives of the five (5) county commissions, the Crow Indian Reservation, and the cities or towns of Big Timber, Billings, Bridger, Fromberg, Hardin, Laurel, and Red Lodge. A Technical Committee of approximately twenty (20) members has been formed from all levels of government within the five county area. This group consists of planners, sanitarians, engineers, environmentalists, agriculturalists, and one industrialist. The President of the Board is Frank Cole, Jr., County Commissioner of Carbon County; the Vice-President is Rodney Fink, Sanitarian of Stillwater County; and the Secretary/Treasurer is McLean (Mac) Clark, Mayor of Big Timber. An Executive Committee functions occasionally and consists of the President, Vice-President, Secretary/Treasurer, and two (2) members at large from the Board. The staff consists of a project director, a planner, a public relations person, and a secretary. A water quality specialist from the Water Quality Bureau is assigned to the project.

13. *How is MYAPO's Program structured?*

Our program is divided into a set of general tasks which are: Administration; Water Quality; Agricultural Nonpoint Source Assessment; Mining, Silviculture, and Construction Nonpoint Source Assessment; Air Quality, Residual Wastes and Land Disposal Evaluation; Facility Planning; Land Use Planning (including Demographic and Economic Projections); Management (including Legal Management); Crow Tribe Administration; and Crow Tribe Subagreement.

14. *Is there planning in the nondesignated areas?*

Yes, this is performed by the Water Quality Bureau of the State Department of Health and Environmental Sciences.

15. *Since the State Water Quality Bureau has control of municipal and industrial waste discharges through the NPDES permit program, what is the thrust of the 208 Program?*

The thrust of our program is in nonpoint source pollution control management. That pollution which enters the natural waters without passing through discreet conveyances, pipes, ditches, drains, etc. is considered nonpoint in origin and is related to activities in agriculture, mining, silviculture, construction, and urban runoff. All contribute various forms of pollution; most of these may be controlled in varying degrees by applying good management practices. Therefore, a set of goals of the program is to develop Best Management Practices for each nonpoint source of pollution. Another set of goals is to develop plans for implementation.

16. *Since EPA provides the funds, does EPA establish or dictate policy?*

There is close coordination between MYAPO, EPA, and the State Water Quality Bureau. Direction is given and expertise is offered, but EPA's control is limited by the conditions of the grant agreement. However, EPA does control the funds, and this is persuasive.

17. *What is the thrust in your water quality program?*

The goals of this program are to identify water quality problems, present and potential [over a twenty (20) year period], and to develop programs and solutions. The consultant is the firm of Hurlbut, Kersich, and McCullough, and the amount of the contract is \$53,970.00. The study has been divided into three (3) general categories: surface water quality, subsurface water quality, and development-urban runoff.

18. *How are the problems identified and processed?*

The problems have been obtained from the Technical Committee and from the public as a result of public participation meetings in each county. The consultant has also developed problems from the literature review and personal information. A method has been developed for the examination of problems, i.e., The Problem and Solution Documentation Procedure. A simplified version of the program flow is: identify candidate problems, determine specific problems, finalize problems and assign final priority, develop candidate solutions, determine specific solutions, and select recommended solutions.

19. *What is residual waste?*

It is solid, liquid, or sludge substances from man's activities. Our Residual Wastes Program has not been initiated, but contract negotiations have started.

20. *Will your agricultural nonpoint source program place additional burdens upon the farmers and ranchers to control pollution?*

It could be burdensome for the control of some forms of pollution; that remains to be seen. However, the thrust of the program will be to identify agricultural practices that are contributing pollution (sediment, generally speaking), to establish treatment procedures by applying Soil Conservation Service (SCS) Handbook methods, and to recommend to the United States Department of Agriculture (USDA) that these water quality conservation practices be funded realistically through the Agricultural Stabilization and Conservation Service (ASCS) on a cost share basis.

21. *Do you expect to achieve control without becoming involved with permits and enforcement?*

That is a good question. Some of our problem streams may have substantial sediment generated as a result of poor range management practices; some irrigation return flows may return sediment, but frequently this load is less than the load that is originally picked up in the ditch; waste spilling may or may not be a problem; poor irrigation practices may accelerate channel erosion; there are other sediment producing agricultural practices. However, in our MYAPO district there is also much natural erosion of stream banks due to the erosive nature of the soils; contribution from agriculture is probably not as great as it is frequently made out to be. An incentive approach has merit, and with reasonable cooperation from the farmers and ranchers significant reduction in sediment from poor agricultural practices will be achieved.

22. *Do you expect to use an incentive program to control NPS pollution in mining, silviculture, and construction?*

No. It is possible that laws on the books cover these situations. This is being determined by our legal consultant who may determine that a comprehensive erosion

and sediment control law is needed. It probably would require that plans for sediment control measures on small operations be submitted to some agency, and that those planning extensive projects obtain permits which would hold the permittee to complete performance of the submitted plan.

23. *How are you going to implement the plan?*

This question cannot be answered at this time. All point source aspects of the plan will probably be implemented by the State Water Quality Bureau. As was previously mentioned, there may be adequate laws on the books to achieve NPS pollution control. New erosion and sediment control legislation may have to be drafted. The Conservation Districts may perform various functions in implementation. It may be feasible to establish an areawide planning and implementation office. These alternatives and others will be examined, and the best approach will be promoted. The public will have an opportunity to participate in the planning process.

Priorities by County and Area

	Big Horn	Carbon	Stillwater	Sweet Grass	Yellowstone	Area
1. Facility Planning	(H)	(H)	(H)	(H)	(H)	(H)
2. Mining	(H)	M	(H)	(H)	L	(H)
3. Recreation-Subdivision	L	(H)	(H)	M	(H)	(H)
4. Groundwater	(H)	L	(H)	L	(H)	M
5. Agricultural Source	M	(H)	L	L	M	M
6. Construction	M	L	(H)	(H)	M	M
7. Residual Wastes	M	M	L	M	L	M
x 8. Salt Water (Saline Seeps)	L	L	(H)	L	M	M
9. Silvicultural	L	M	L	M	L	M
10. Urban Stormwater	L	L	L	L	M	L
11. Industrial	L	L	L	L	L	L
12. Hydrographic	L	L	L	L	L	L

Preliminary Facility Plans

BIG HORN COUNTY

City

Consultant

Lodge Grass

Mueller Engineering, Inc.
of Billings
Robert Sanderson

CARBON COUNTY

City

Consultant

Bearcreek
(under consideration)

Hurlbut, Kersich, & McCullough
of Billings
David McCullough

Fromberg

Morrison-Maierle, Inc.
of Billings
Larry Larsen

STILLWATER COUNTY

City

Consultant

Fishtail

Mueller Engineering, Inc.
of Billings
Robert Sanderson

Reed Point

Morrison-Maierle, Inc.
of Billings
Larry Larsen

SWEET GRASS COUNTY

City

Consultant

Big Timber

Wenzel and Company
of Great Falls
Jim Heberly

YELLOWSTONE COUNTY

City

Consultant

Billings Heights-
Lockwood

Christian, Spring, Sielbach &
Associates of Billings
Gerald Gaston

Huntley

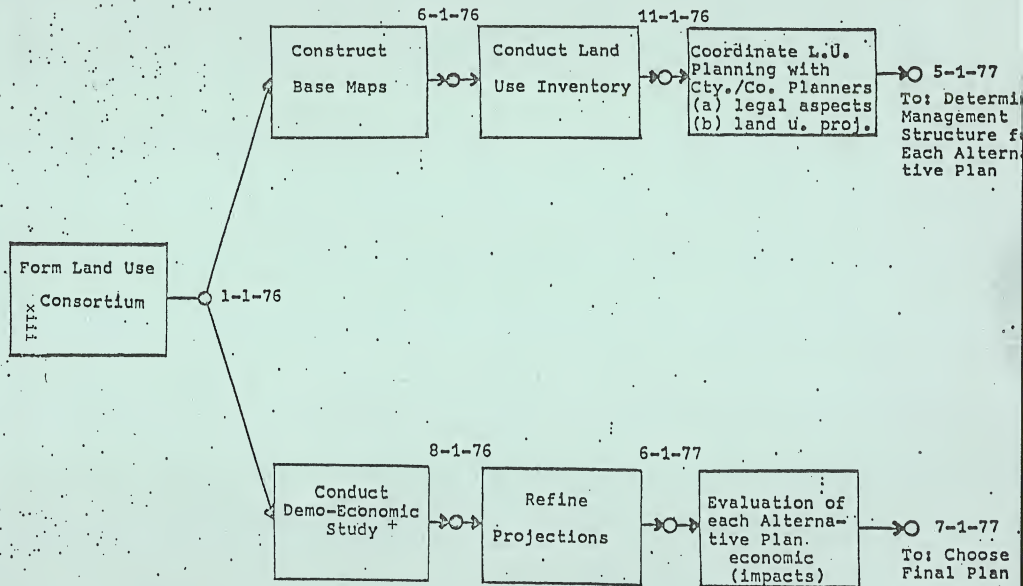
Morrison-Maierle, Inc.
of Billings
Larry Larsen

BIG TIMBER, MONTANA



Figure 3.

LAND USE PROGRAM *



* Revised: Does not correspond with overall 208 flow diagram.

+ Demo-Economic Program included in Land Use Program for organizational purposes.

Land Use Classification System

- | | |
|---|---|
| 1. Urban, Scattered,
and Built Up | 1.1 residential/commercial
1-a high density (1 or
more D.U./acre)
1-b low density (.05 to
.9 D.U./acre)
1.2 rural areas
1.3 industrial
1.4 water, sewage, and solid
waste facilities
1.5 second home subdivisions
(unplatted)
1.6 platted subdivisions |
| 2. Recreation Areas | 2.1 national wildlife refuges
2.2 campgrounds/reststops/
fishing access
2.3 wilderness areas (proposed)
2.4 blue ribbon fisheries
2.5 other fisheries
2.6 state parks/state or
national recreation areas
2.7 ski areas
2.8 other |
| 3. Agricultural, Range,
Forest, and Problem
Lands | 3.1 urban and scattered built-up
3.2 irrigated lands
3.3 dry croplands
3.4 commercial feedlots
3.5 grasslands
3.6 coniferous forests
3.7 deciduous forests
3.8 bad lands (clay hills)
3.9 saline seeps
3.10 alkali flats
3.11 irrigation canals
3.12 marsh lands |
| 4. Mineral and Energy
Production Areas | 4.1 coal deposits
4.2 deposits of other minerals
(e.g., chrome, uranium,
copper, etc.) |

(continued)

Land Use Classification System

(continued)

- 4.3 areas of open pit extraction
- 4.4 past and present underground mining sites
- 4.5 rock quarries, sand and gravel pits
- 4.6 deposits of sand, gravel, bentonite, limestone, etc.
- 4.7 storage areas and tailings ponds (past and present)
- 4.8 oil and gas fields
- 4.9 potential geothermal areas

Land Suitability System

1. Land Ownership
 - 1.1 state lands
 - 1.2 U.S. Forest Service
 - 1.3 BLM
 - 1.4 private lands
2. Climate (Precipitation)
3. Soil Associations
4. Geological Features and Groundwater Recharge Areas

NEWS

Independence revealed during 208 open hearing

by Nan Heckart

Pioneer
10/13/74

The independence of the West seemed to prevail at a two hour open meeting held last Thursday to present alternatives of secondary sewage treatment required by the Environmental Protection Agency of the federal government.

The small group attending appeared reluctant to accept dictums from the federal government.

A total of nine - excluding city council members and Jim Heberly of Wenzel, Associates of Great Falls - showed up for the well-advertised hearing required by the 208 planning program.

Of those nine, five represented organizations, including Michael Sierz, local City-County planner, Ray Wells, Al Bond and Ray Hedrick, City-County Sanitarian whose three county district includes Sweet, Grass County.

That left four representatives from the general population of Big Timber to discuss the alternatives - all of them expensive - to meet upgraded EPA standards for sewage disposal.

Of the alternatives outlined by Heberly, the cheapest would be total evaporation, not feasible because of the

limited land available. "It would take 100 acres," the engineer said, "And you just don't have them."

Use of effluent for irrigation, he added, would be just as unfeasible since there is not enough land in the vicinity to accept that much water. Effluent would have to be piped across the river with pumps, he added, which would be expensive both initially and in upkeep.

The next cheapest alternative - the one apparently favored by council members - is a stabilization process which involves diking the present 20 acre lagoon and constructing an additional 18 acre lagoon.

Estimated total cost of construction was given at \$201,000 at the hearing.

Seventy-five percent would be financed with federal aid, leaving twenty-five percent, or about \$50,000, to be raised locally.

A question raised by Doug Lowry concerned the cost figure.

Copies were then made of the estimate and handed around. Heberly defended the figures as reasonable for the times.

Joe Hansen asked if the lagoon would percolate or be sealed. Heberly answered only one-fourth inch daily percolation was allowed, and that in any case the lagoon

would probably seal itself.

In answer to the suggestion that Big Timber do the construction themselves, the engineer indicated that would have to be a local decision. He pointed out, however, the difficulty in meeting stringent regulations through relatively inexperienced community effort would be a major problem. He said regulations seemed aimed at severe pollution problems of the East, but applied equally to all sections of the country.

"After all your work and expense," he added, "you might still have to start over to meet requirements."

In answer to the suggestion that a local contractor might prove cheaper, Heberly commented that it was not always so. Mayor McLean Clark added that in the past the opposite had often proved true.

Another suggestion touched upon an alternative not previously mentioned - to do nothing towards complying with the standards.

Heberly replied that state and federal officials would take steps, pointing out that the State Board of Health and Environmental Science could levy a fine of up to \$10,000 per day for communities not complying with state regulations against pollution of streams.

When asked what would happen if Big Timber couldn't pay, Heberly replied he had no idea; it had never been tried.

At one point during the hearing City-County Planner Mike Sierz presented an organized approach to community problems implementing needs rated against available funds to establish priorities which would give direction to community projects.

General agreement of the plan followed, with Doug Lowry remarking "If the city is to survive it needs to set its own priorities instead of letting federal government tell it what to do."

The 208 study hearing completion is the first step in complying with regulations and is completely funded federally. The second and third steps involving drawing up plans for the stabilization system (if chosen) and for actual construction are each funded only 75 percent federally.

Following the open hearing, a letter of intent will be drafted and submitted. The letter, according to Mayor Clark, "will buy us some time before step 2 must begin."

As the hearing broke up there was obvious dissatisfaction at the financial burden placed on small towns by imposed federal standards.

Board cites 4 problems *-Sweetgrass 8/26/75* Subdivision disapproved

Sweet Grass County Commissioners recently accepted a report from the County Planning Board that the proposed Sweet Grass Subdivision be disapproved.

In a letter to petitioners seeking approval of the subdivision—Mr. and Mrs. Dean Lowry, Mr. and Mrs. Doug Lowry, Mr. and Mrs. Lowell Connerton and Mr. and Mrs. Herman Frank—commissioners cited four reservations about the proposed project included in a report from the planning board.

Although the letter did not say so, commissioners have indicated they will reconsider the proposal if changes are made to eliminate objections by the planning board.

The advisory board had expressed concerns about four items—the length of a block on 7th Avenue, the sizes of several lots, access to two proposed lots, and the availability of city water service to the area.

IN A REPORT to the commissioners, the planning board said that "if the proposal is accepted without change, it will create a block along 7th Avenue which will be longer than 1,200 feet. Section XXX, A. 6 of the Sweet Grass County Subdivision Regulations says in part "...blocks in urban-suburban subdivisions shall not exceed 1,200 feet in length."

The board recommended that the proposed north-south street, known as "Boulder Street" be extended northerly to connect 6th and 7th avenues.

Another of the main concerns of planning board members is the ability of the Big Timber water system to service the area. "The planning board is concerned about the feasibility of the Big Timber city water supply having the capability of servicing the proposed subdivision. The board recommends that the owners provide further information in

this regard before approval of the proposed subdivision be considered by the Board of Commissioners."

Monday night Big Timber City Council members addressed themselves to the two issues (see separate story).

Other objections to the proposed addition, cited by the planning board, included the size of eight lots of the Connerton-Frank section of the subdivision. "Lots 12 through 17 and lots 31 and 32 of the...property do not meet the requirements of Section III, A. 5(f)...that says no lot shall have an average depth greater than three times the average width. The lots mentioned above are too narrow to meet this standard.

The fourth objection was about access to two lots. "Lots 41 and 42 of the Connerton-Frank property do not provide proper access as defined by regulations, Section III, A. 5(a)...that says each lot shall have a public or private street or road. The two lots in question about an alley only.

Remedial Boulder River work multi-purposed

Pioneer Sept 22, 1976
Work recently on the Boulder River upstream from the county bridge on the Old Boulder Road was done under the direction of soil conservation engineers as part of the 216 flood prevention program and paid for with federal funds.

The rip-rapping and reworking of the stream bed was expected to protect the bridge and to assure an

adequate water supply to the Pioneer Ditch as well as to protect area property.

The work may also have prevented a possible delay of the interstate construction, since it will protect the site of the future interstate bridge from washing and seepage.

In 1974 the river flooded approximately 20 acres of pasture near the Tope Strobel place and endangered other properties along the Boulder

River as it created a new path.

Following that flood a dike was constructed upstream and rip-rap work was done.

The 1975 flood damaged the rip-rap and overflowed the newly-constructed dike, allowing the river waters to flood approximately the same areas as before.

During both floods rock and gravel washing downstream

endangered the county-owned bridge on the Old Boulder Road.

The current work was a joint project between the county, the Pioneer Ditch Co. and the Soil Conservation office.

Last week's Pioneer included a picture which showed the flood control work had inadvertently destroyed a favorite swimming place near the county bridge.

I. HISTORICAL OVERVIEW

SWEET GRASS COUNTY

As in the cases of the two previous counties, the economy of Sweet Grass County is predominantly dependent on agriculture for employment and income. Demographic and economic conditions have been slightly different however.

In the decade of the 1960s, employment increased by 41 persons. These increases were in large part a response to the heavy flow of traffic on Interstate Highway 90 which crosses the region from east to west. Since the highway is not completed across most of Sweet Grass County, the traffic follows the old U.S. highway through the towns. This situation appears to be the reason for an increased number of stops and, therefore, purchases by the through-travelers. In addition, Sweet Grass County shares the recreation and tourism potential of the two counties described previously because a portion of the Beartooth Mountains along with good fishing opportunities are available in the southern portion. During the 1960s, these uses resulted in a small net increase in employment.

A. POPULATION

There are three characteristics of the population which are important in the identification of regional patterns and which are especially helpful in population projections. These characteristics are discussed below and include: 1) number of inhabitants; 2) racial composition; and 3) sex and age composition. The first of these--number of inhabitants--is discussed with emphasis on two time periods, the 1960s and the first half of the 1970s. The experiences in each of these periods were dissimilar in all five counties. The second characteristic--racial composition--is important in understanding the region's population because of its influence on fertility rates and migration rates. Sex and age composition in the region are presented third. These give additional insight into demographic conditions.

B. Employment

Employment in 1960 and 1970, as reported by the Bureau of the Census, is shown in Table I-4 (comparable data are not available for 1975). Employment increased in the MYAPO region by 7.2 percent during the 1970s. This increase is similar to that of Montana (7.4 percent), but it is less than half of the percentage increase in the United States as a whole (18.4 percent). Employment, then, increased much more slowly in the region than it did elsewhere in the nation. The net out-migration from the region noted above can be seen as a direct result of the region's slow economic growth compared to other areas.

As might be expected, employment changes over the decade of the 1960s were not uniform throughout the region. The three counties which are dependent on agriculture had very different experiences from the region as a whole. Carbon and Stillwater Counties experienced substantial declines in employment over the ten-year period, primarily due to decreased employment in agriculture. The total decrease was 984 persons in both counties, 531 of which had been in agriculture (1960 and 1970 Census of Population, various volumes). The other primarily agricultural county, Sweet Grass, experienced a minor increase in employment of 41 positions, or 3.4 percent over 1960. This increase was minimal and was a result of increased construction in the county.

1. Unemployment Rate

In 1960, the MYAPO region had a somewhat lower unemployment rate than Montana but a somewhat higher rate than the nation. Unemployment rates were lowest in the three westernmost counties and were lower than the national rate. Yellowstone County was near the state average but higher than the average for the region. The most significant divergence was the unemployment rate in Big Horn County, nearly twice that of the national average.

Unemployment rates in 1970 were less divergent within the region. All of the counties except Sweet Grass experienced unemployment rates lower than the state and higher than the nation. Sweet Grass County's unemployment situation was exceptionally good with an unemployment rate of 2.1 percent in 1970.

TABLE I-1

POPULATION OF THE MYAPO REGION AND EACH COUNTY,
1960, 1970, AND 1975

County	1960	1970	Percentage Change 1960-1970	1975	Percentage Change 1970-1975	Percentage Change 1960-1975
Big Horn	10,007	10,057	0.5	10,900	8.4	8.9
Carbon	8,317	7,080	-14.9	7,700	8.8	-7.4
Stillwater	5,526	4,632	-16.2	5,300	14.4	-4.1
Sweet Grass	3,290	2,980	-9.4	2,900	-2.7	-11.9
Yellowstone	79,016	87,366	10.6	97,300	11.4	23.1
MYAPO Total	106,156	112,115	5.6	124,100	10.7	16.9
Montana	674,767	694,409	2.9			
U.S.	179,323,175	203,211,926	13.3			

Source: U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1964).

U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: Montana (Washington, D.C.: U.S. Government Printing Office, 1963).

U.S. Bureau of the Census, Census of Population: 1970, Detailed Characteristics: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1973).

U.S. Bureau of the Census, Census of Population: 1970, General Population Characteristics: Montana (Washington, D.C.: U.S. Government Printing Office, 1971).

U.S. Bureau of the Census, "Population Estimates and Projections", Current Population Reports-Series P-26 (Washington, D.C.: U.S. Government Printing Office, 1975).

TABLE I-2

RACIAL COMPOSITION OF MYAPO REGION POPULATION
1960 and 1970

County	White		Indian		Other Non-white	
	Number	% of Total	Number	% of Total	Number	% of Total
Big Horn						
1960	6584	65.8	3334	33.3	89	0.9
1970	6018	59.8	3917	39.0	122	1.2
Carbon						
1960	8300	99.8	5	0.1	12	0.1
1970	7022	99.2	29	0.4	29	0.4
Stillwater						
1960	5511	99.7	12	0.2	3	0.1
1970	4595	99.2	23	0.5	14	0.3
Sweet Grass						
1960	3290	100.0	---	---	--	---
1970	2978	100.0	2	---	--	---
Yellowstone						
1960	78227	99.0	410	0.5	379	0.5
1970	85765	98.2	1063	1.2	539	0.6
MYAPO Region Total						
1960	101912	96.0	3761	3.5	483	0.5
1970	106378	94.9	5034	4.5	704	0.6
Montana						
1960	650538	96.4	21181	3.1	3048	0.5
1970	663043	95.5	26385	3.8	4981	0.7
United States						
1960	158,837,679	88.6	523,591	0.3	19,964,405	11.1
1970	178,119,221	87.6	763,594	0.4	24,327,343	12.0

Sources: U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1964).

U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: Montana (Washington, D.C.: U.S. Government Printing Office, 1963).

U.S. Bureau of the Census, Census of Population: 1970, Detailed Characteristics: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1973).

TABLE I-3

SEX DISTRIBUTION BY COUNTY AND REGIONAL TOTAL
1960 and 1970

<u>County</u>	<u>Male</u>		<u>Female</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Big Horn				
1960	5,032	50.3	4,975	49.7
1970	4,990	49.6	5,067	50.4
Carbon				
1960	4,203	50.5	4,114	49.5
1970	3,559	50.3	3,521	49.7
Stillwater				
1960	2,863	51.8	2,663	48.2
1970	2,338	50.5	2,294	49.5
Sweet Grass				
1960	1,689	51.3	1,601	48.7
1970	1,556	52.2	1,424	47.8
Yellowstone				
1960	38,843	49.2	40,173	50.8
1970	42,459	48.6	44,907	51.4
NYAPO Region Total				
1960	52,630	49.6	53,526	50.4
1970	54,902	49.0	57,213	51.0
Montana				
1960	343,743	50.9	331,024	49.1
1970	347,005	50.0	347,404	50.0
United States				
1960	88,331,494	49.3	90,991,681	50.7
1970	98,912,192	48.7	104,299,734	51.3

Sources: U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1964).

U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: Montana (Washington, D.C.: U.S. Government Printing Office, 1963).

TABLE I-4

LABOR FORCE, EMPLOYMENT, AND UNEMPLOYMENT RATE OF THE
MYAPO REGION, MONTANA, AND THE UNITED STATES
1960 and 1970

	Civilian Labor Force		Employment		U/LF	
	1960	1970	1960	1970	1960	1970
Big Horn	3,265	3,317	2,941	3,163	9.9%	4.6%
Carbon	3,053	2,524	2,940	2,393	3.7%	5.2%
Stillwater	2,010	1,617	1,966	1,529	2.2%	5.4%
Sweet Grass	1,268	1,276	1,208	1,249	4.7%	2.1%
Yellowstone	31,518	34,996	29,470	32,966	6.5%	5.8%
MYAPO Region	41,114	43,730	38,525	41,300	6.3%	5.6%
Montana	248,073	270,834	231,270	248,342	6.8%	8.3%
United States	68,144,079	80,051,046	64,639,252	76,553,599	5.1%	4.4%

Sources: U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: Montana (Washington, D.C.: U.S. Government Printing Office, 1963).

U.S. Bureau of the Census, Census of Population: 1970, General Social and Economic Characteristics. Final Report PC(1)-C28 Montana. (Washington, D.C.: U.S. Government Printing Office, 1971).

U.S. Bureau of the Census, Census of Population: 1960, Characteristics of the Population: U.S. Summary (Washington, D.C.: U.S. Government Printing Office, 1964).

U.S. Bureau of the Census, Census of Population: 1970, Detailed Characteristics: U. S. Summary (Washington, D.C.: U. S. Government Printing Office, 1973).

TABLE I-5

UNEMPLOYMENT RATES
MYAPO REGION, MONTANA, AND THE UNITED STATES
1970 THROUGH 1975

	<u>Four-County Region*</u>	<u>Yellowstone County</u>	<u>Montana</u>	<u>United States</u>
1970	5.4	5.2	5.5	4.9
1971	6.3	5.5	6.3	5.9
1972	6.9	5.6	6.2	5.6
1973	6.9	5.1	6.3	4.9
1974	7.1	5.3	6.7	5.6
1975	7.3	6.7		

*Big Horn, Carbon, Stillwater, and Sweet Grass Counties combined.

Source: Montana and United States data from: Manpower Report of the President, U.S. Government Printing Office, Washington, D.C., April 1975, p. 230, and p. 298, respectively.

MYAPO Region data from: State of Montana Employment Security Division, Montana's 14 Major Labor Market Areas, Helena, January, 1976, pp 24-5, 94-5.

TABLE I-6

MEDIAN FAMILY INCOME
MYAPO REGION, MONTANA, AND THE UNITED STATES
1960 and 1970

	<u>Median Family Income</u>			
	<u>1960</u>		<u>1970</u>	
	<u>Current</u>	<u>Constant^a</u>	<u>Current</u>	<u>Constant^b</u>
	<u>dollars</u>	<u>1958 dollars</u>	<u>dollars</u>	<u>1958 dollars</u>
Big Horn	\$4,375	\$4,252	\$7,310	\$5,634
Carbon	4,336	4,214	6,578	5,087
Stillwater	4,790	4,655	6,752	5,222
Sweet Grass	4,333	4,211	6,530	5,050
Yellowstone	6,150	5,977	8,966	6,934
Montana	5,403	5,251	8,512	6,583
United States	5,660	5,500	9,596	7,422

^a Calculated using 1960 personal consumption deflator of 102.9

^b Calculated using 1970 personal consumption deflator of 129.3. Deflators from Economic Report of the President, (Washington, D.C.: U.S. Government Printing Office, February 1974), p. 252.

II. THE BASIC INDUSTRIES OF THE MYAPO REGION

A. AGRICULTURE

The Yellowstone River valley crosses the MYAPO region in an east-west direction and is a fertile farmland belt. The agricultural history of the valley dates back to the first permanent settlements and has been the single most significant factor in the settlement and tradition of the area. The role of agriculture in the economy has declined somewhat over the last 15 years, but it is still the single most important economic sector in four of the five MYAPO counties.

Table II-1 presents the agricultural employment of the counties for 1973, the last year for which county specific data are available. It is evident that each of the counties except Yellowstone derives a large portion of its employment from agriculture. Yellowstone County has the largest absolute amount of agricultural employment of any single county, but the county's economy is so diverse that agriculture accounts for less than four percent of total employment. The other counties have less total agricultural employment but in each case the proportion of total employment is approximately one-third.

TABLE II-1
AGRICULTURAL EMPLOYMENT
1973

	<u>Agricultural Employment</u>	<u>% of Total Employment</u>
Big Horn	1095	28.2
Carbon	967	31.2
Stillwater	679	36.2
Sweet Grass	467	31.6
Yellowstone	1689	3.9
MYAPO Region	4897	9.2

Source: U.S. Department of Commerce, Bureau of Economic Analysis,
Regional Economic Information Service, Summary Data Tapes.

The agricultural sector has experienced considerable change over the 15-year period since 1960. Its dominance in 1973 is clear, but its importance has declined from earlier years. Table II-2 presents Census employment figures for 1960 and 1970.¹ In each county except Sweet Grass the absolute amount of employment and the proportion of the total decreased significantly.

There were several forces which acted to bring about a decrease in agricultural employment. First, the long-standing trend toward mechanization has decreased the dependence on labor. Mechanization has also resulted in larger farms. The average farm size in Montana was 2104 acres in 1960 and 2432 in 1970 (Montana Department of Agriculture and Statistical Reporting Service, 1974:8). This causes a decrease in the number of farms and, thus, the amount of agricultural employment.

TABLE II-2
AGRICULTURAL EMPLOYMENT
1960 and 1970

	1960		1970	
	<u>Agricultural Employment</u>	<u>% of Total</u>	<u>Agricultural Employment</u>	<u>% of Total</u>
Big Horn	1195	40.6	885	28.0
Carbon	954	32.4	696	29.1
Stillwater	695	35.4	409	26.7
Sweet Grass	492	40.7	491	39.3
Yellowstone	1928	6.5	1410	4.3

Source: U.S. Bureau of the Census, U.S. Census of Population: 1960, Characteristics of the Population: Montana (Washington, D.C.: U.S. Government Printing Office, 1963).

U.S. Bureau of the Census, U.S. Census of Population: 1970, General Population Characteristics: Montana (Washington, D.C.: U.S. Government Printing Office, 1971).

¹These data are compiled from the principal industry affiliation of employed persons whereas the Bureau of Economic Analysis (BEA) data given in Table II-1 are compiled on an establishment basis by number of jobs. Because of differences in definitions and data sources, the data in the two tables are not directly comparable.

The trends toward mechanization and large farms is a national, if not world-wide, trend. There are other pressures on agriculture which are less universal. The largest of these is competition with other land uses. The development of recreation and tourism in the counties has led to greatly increased land values. Farming does not generate enough profit to allow purchasing of land at residential prices. As a result, when a farmer retires or sells his farm, the purchaser is not another farmer but is more likely to be a developer or speculator. It follows, then, that there is less land in agricultural production from year to year. Another cause of reduced employment is the recent instability of the market. Prices and costs have fluctuated rapidly, and farming has been discouraged as a profession (McFarland, personal communication, June 2, 1976).

The net result of changes in the agricultural profession is economic hardship for areas that have historically been largely dependent on it. These trends are likely to continue, and agriculture will provide an increasingly smaller portion of income and employment in the MYAPO region.

B. MINING

Mining has historically been an important part of the economic base of Montana, and the MYAPO region is no exception... There was an important coal mining industry in Carbon County, chrome was mined in Stillwater County during World War II, and oil and gas exploration and production have occurred regularly throughout the region. In the last few years, interest in coal development has increased manyfold; there is much renewed interest in chrome and platinum mining in the Stillwater Complex, and there are promising indications of significant new oil finds in deep wells on the east face of the mountains in Stillwater, Sweet Grass, and Carbon Counties.

C. RECREATION-TOURISM

Recreation and tourism are relatively easy to define qualitatively but very difficult to define operationally. The economic sectors which serve recreation and tourism generally serve the resident population as well. The trade and service sectors of the economy serve the needs of the area's residents and, in that sense, are nonbasic industries. However, whenever the customers of the trade and service sectors are non-residents who are traveling through the area or who have the area as a destination other than for permanent residence, the demand is from outside the area and thus these sectors are basic.

It is impossible to determine exactly the extent to which the trade and service sectors respond to each demand. A fairly accurate approach, whenever personal interview of each individual proprietor is not possible, is to compare an area's employment in the trade and service sectors to such employment in other areas of the same population. If employment is comparatively high, most of the excess may be attributed to recreation and tourism demand. This procedure was applied to the MYAPO region with results as shown in Table II-3.

TABLE II-3

RECREATION AND TOURISM EMPLOYMENT MYAPO REGION 1973

	Total Trade Employment ^a	Basic Trade Employment ^b	Total Services Employment ^a	Basic Services Employment ^b
Big Horn	522	133	448	---
Carbon	366	197	272	72
Stillwater	214	18	128	3
Sweet Grass	273	140	152	35
Yellowstone	11,444	---	7,566	---
MYAPO Region	12,819	488	8,566	110

^a U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, Summary Data Tapes.

^b Mountain West Research, Inc.

Stillwater County, like Carbon County, has experienced similar trends in recreation and tourism. There is considerable through-traffic on I-90 which passes near Park City and the county seat of Columbus. Recreation attractions include camping, picnicking, and hiking in Custer National Forest as well as hunting and fishing both there and on adjacent lands. There is also considerable second-home construction, mainly on the Stillwater River. Columbus benefits most from these activities although there are some gas and convenience item sales in Absarokee.

Recreation and tourism in Sweet Grass County is based on attractions quite similar to those in Carbon and Stillwater Counties. I-90 generates through-traffic; Gallatin National Forest attracts outdoor recreationers; and the Boulder River area is the location of vacation-home construction. An additional impetus to sales to recreationers and tourists can be attributed to the fact that I-90 has not been completed through much of the county but follows old highway 10 through the towns. Comparison of basic trade and service employment in Stillwater and Sweet Grass Counties indicates that driving through the towns encourages drivers to stop and to buy more often than they would if they were travelling on limited access highways. The result is that Sweet Grass County had more basic employment in trade and services than Stillwater County did even though they are almost identical in attractions as a recreation area (Inman, personal communication, May 27, 1976).

Senate Bill 1018, which was introduced in the U.S. Senate in March 1975, would also encourage recreation and tourism in the western counties. This bill would designate 542,437 acres of the Custer and Gallatin National Forests as the "Beartooth Wilderness". A considerable portion of the wilderness would be within Carbon, Stillwater, and Sweet Grass Counties and access to it would be available from each county. Rangers and planners for the National Forests state that the publicity associated with the wilderness proposal increased visits somewhat, and they believe that official designation would draw even more people to the area (Miller, Inamn, and Wetzsteon, personal communication, 1976).

III. THREE ALTERNATIVE FUTURES FOR THE MYAPO REGION

The preceding section has described alternative employment scenarios for the basic industries in each of the five counties. The purpose here is to combine them so that their aggregate implications can be examined for the communities in the region. Alternative Future 1 (AF1) and Alternative Future 3 (AF3) are easy to describe because they simply represent the combination of the lowest scenarios and highest scenarios for each industry. For an industry like agriculture that only has a single scenario, the same numbers are entered for each AF, but for many of the basic industries, there is a substantial difference between the low and the high scenarios. The largest variations occur in oil refining, coal mining, and hard rock mining.

Alternative Future 2 (AF2), on the other hand, is more difficult to characterize. In the case where there is only a single scenario for an industry, there is obviously no interpretation problem. Where there are three industry scenarios, AF2 uses Scenario 2. Where there are two industry scenarios, AF2 uses the scenario felt to be more probable. There are three sectors for which there are only two scenarios--meat packing, oil and gas, and federal government. For meat packing the low scenario is felt to be more probable than Scenario 2. People have always talked of new packing operations in Billings; but, given the basic economic forces acting on the industry and given the vulnerability of the existing two firms to adverse market developments, Billings will be doing well to meet the assumptions of Scenario 1. For oil and gas, Scenario 2 is still fairly conservative and, as explained in the previous section, is thought to be more probable than Scenario 1. Finally, federal government employment under Scenario 2 is thought to be more likely than under Scenario 1. Much of the federal government's activity in the MYAPO region is oriented toward natural resources management that will be affected by western energy development or toward Indian Trust responsibilities which are becoming more complex and more demanding. For these reasons, the 2½ percent annual increase hypothesized in Scenario 2 for the key resource management and Indian-related agencies does not seem at all excessive.

A. COUNTY PROJECTIONS

The county-specific projections demonstrate more variability than the regional projections. In general, the smaller counties are more susceptible to employment changes in any single basic sector than is Yellowstone County or the region as a whole. The result is that differences among the projections for the three alternative futures are large in the smaller counties.

1. Sweet Grass County

The estimate of 1975 population in Sweet Grass County, based on the age-sex and LFPR assumptions of the MYAPO model, is 3,623 (see Table III-4). This is higher than the Bureau of the Census estimate of 2900. Bureau of Census population estimates for non-Census years are derived by using an allocation method that has two possible sources of error. The Bureau of the Census allocates part of its national estimate to Montana, which is referred to as the control total. The Bureau of Business and Economic Research at the University of Montana then uses various indicators from a group provided by the Census to determine how the state population is to be allocated to the 56 counties. The allocation procedure uses such data as births, deaths, vehicle registrations, utility connections, etc. The first source of error is the possibility that the state control total is low and which would increase the probability of underestimating the Sweet Grass population. Second, the variables used to allocate the population may not adequately reflect the population of Sweet Grass County.

In order to attempt reconciliation of the estimates, the county planner was contacted. His feeling is that population has increased since 1970 by some unknown amount, possibly as much as 15 percent. In addition, Department of Community Affairs estimates Sweet Grass County population as 3100 in 1974 (Fierz, personal communication, July 19, 1976). It appears that the Census estimate may be somewhat low and the model estimate somewhat high.

Projections for the remainder of the study period are presented in Tables III-1 through III-4 and indicate a gradual decrease in population and employment as a result of the dominance of the agricultural sector under AF1. AF2 and AF3, however, demonstrate large population and employment increases resulting from possible mining activity at the AMAX mine.

TABLE III-1

EMPLOYMENT PROJECTIONS FOR SWEET GRASS COUNTY

<u>Year</u>	<u>Alternative Future 1</u>	<u>Alternative Future 2</u>	<u>Alternative Future 3</u>
1975	1550	1550	1550
1980	1588	1599	1599
1985	1579	1613	1613
1990	1545	1770	2099
1995	1541	1763	2085

Source: Mountain West Research, Inc.

TABLE III-2

PERSONAL INCOME PROJECTIONS FOR SWEET GRASS COUNTY

<u>Year</u>	<u>Alternative Future 1</u>		<u>Alternative Future 2</u>		<u>Alternative Future 3</u>	
	<u>Total</u>	<u>PerCapita</u>	<u>Total</u>	<u>PerCapita</u>	<u>Total</u>	<u>PerCapita</u>
1975	\$15,792,625	\$4359	\$15,792,625	\$4359	\$15,792,625	\$4359
1980	18,993,471	5204	19,002,386	5176	19,002,386	5176
1985	22,137,917	5168	22,149,636	6035	22,149,636	6037
1990	25,861,658	7524	26,094,586	6757	26,495,956	5858
1995	30,152,070	8014	30,379,036	8108	30,750,088	7001

Source: Mountain West Research, Inc.

2. Community Population Projections

The projections for some of the communities in each county except Yellowstone experience population changes based entirely on natural growth or decline. All communities which were not part of the basic employment residential allocation are assumed not to have in- or out-migrants and thus reflect only deaths, births, and educational migrants. Those communities to which migration is allocated have much more fluctuation in population, both upward and downward.

Sweet Grass County has only one large community, Big Timber, that is assumed to receive all in-migrants. Under AF1 this amounts to a 14 percent increase over the 20-year period or .6 average annual growth. AF2 and AF3 projections demonstrate a much more rapid population growth, 1.5 percent and 2.7 percent average annual rates, respectively, as a result of projected mining activity at the Stillwater Complex. Again, these rates are somewhat misleading because the large changes occur in one or two-year periods. For example, the average annual rate of growth from 1985 to 1990 under AF3 is 8.5 percent.

In summary, projections for MYAPO region communities demonstrate the same relative vulnerability as their respective counties. Communities in outlying counties experience either gradual declines or demonstrate extreme vulnerability to employment level changes, particularly in response to mining activity. Carbon County is projected to have more steady growth because no large, immediate changes in basic employment are foreseen. Yellowstone County communities grow at a steady pace, again mirroring the diversity of the economic base of the county.

TABLE III-3COMMUNITY POPULATIONS, 1970 AND 1975
MYAPO REGION

	1970 Population	1975 Population Estimate
BIG HORN COUNTY		
Busby	300	300
Crow Agency	1000	1400
Fort Smith	150	150
Hardin	2733	3000
Lodge Grass	806	875
Pryor	50	50
St. Xavier	100	100
Wyola	125	95
CARBON COUNTY		
Bearcreek	31	60
Bridger	717	825
Fromberg	364	425
Joliet	412	550
Red Lodge	1844	2000
Roberts	200	250
STILLWATER COUNTY		
Absarokee	600	700
Anaconda Mine Site	0	25
Columbus	1173	1350
Fishtail	15	15
Johns-Manville Mine Site	0	25
Nye	10	10
Park City	430	600
Reedpoint	133	175
SWEET GRASS COUNTY		
AMAX Mine Site		25
Big Timber	1592	1750

TABLE III-4

SWEET GRASS COUNTY POPULATION PROJECTIONS

<u>Year</u>	<u>Alternative Future 1</u>	<u>Alternative Future 2</u>	<u>Alternative Future 3</u>
1975	3623	3623	3623
1976	3614	3614	3614
1977	3606	3606	3606
1978	3598	3598	3598
1979	3658	3679	3679
1980	3650	3671	3671
1981	3640	3662	3662
1982	3630	3652	3652
1983	3619	3641	3641
1984	3605	3627	3627
1985	3589	3670	3669
1986	3527	3933	4493
1987	3506	3917	4626
1988	3485	3901	4617
1989	3462	3882	4605
1990	3437	3862	4523
1991	3411	3840	4508
1992	3384	3818	4493
1993	3357	3795	4428
1994	3374	3771	4410
1995	3345	3747	4392

Source: Mountain West Research, Inc.

TABLE III- 5

COMMUNITY POPULATION PROJECTIONS
SWEET GRASS COUNTY

	<u>AMAX Mine Site</u>	<u>Big Timber</u>	<u>Rural Residual</u>
Estimated 1975 ^a	25	1750	1848
<u>AF1</u>			
1980	25	1890	1735
1985	25	1947	1617
1990	0	1950	1487
1995	0	1996	1349
<u>AF2</u>			
1980	25	1911	1735
1985	50	2001	1619
1990	0	2362	1500
1995	0	2369	1378
<u>AF3</u>			
1980	25	1911	1735
1985	50	2001	1618
1990	0	3012	1511
1995	0	2983	1409

^aAs estimated in Table III-77. Rural residual equals AF2 value for county for 1975 minus community estimates.

Source: Mountain West Research, Inc.

